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On-The-Farm Swine Selection

Cooperative Extension, South Dakota State University

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On-The-Farm Swine Selection

Cooperative Extension Service

SOUTH DAKOTA STATE COLLEGE

On-The-Farm Swine Selection

Selecting high quality brood sows and boars is the first step toward increased productivity and desirable meat-type pork.

In attempts to make selection an easier job, swine breeders have become increasingly conscious of the importance of a good swine breeding program and of the part that heredity plays in the improvement of performance and carcass quality.

They no longer select breeding stock on the basis of sight alone. Today modern selection programs place emphasis on records of performance and on carcass cut-out values. This is desirable because past research has indicated that visual inspection alone cannot identify animals superior from the genetic standpoint.

POINTS TO REMEMBER WHEN SELECTING BREEDING STOCK

You don't create new inheritance in animals. You merely devise ways of finding animals that are superior in the desired traits because of their genetic makeup, and then mate these animals to combine the best qualities of both into the offspring.

All variations in livestock occur because of both heredity and environment. The problem is to determine which one is largely responsible. Heritability estimates for various traits give us a general idea of this.

For instance, growth rate of pigs up to 5 months is about 30% heritable. This means that approximately 30% of the variation among animals in a herd is due to differences in inheritance and approximately 70% is due to differences in environment.

Variations due to environment are not transmitted from parents to offspring, but they may conceal variations due to heredity. Therefore, you must keep environmental conditions as constant as possible when making comparisons of prospective breeding animals.

Table 1. One System of Ear Notching Pigs

Number	Location of notches on ear
1	1 lower right
2	2 lower right
3	1 lower left
4	1 lower right; 1 lower left
5	2 lower right; 1 lower left
6	2 lower left
7	2 lower left; 1 lower right
8	2 lower left; 2 lower right
9	3 lower left
10	1 upper right
11	1 upper right; 1 lower right
20	2 upper right
30	1 upper left

WHAT A BREEDER MUST DO

To set up a management system that will enable proper selection, you must:

1. Establish goals to strive for, such as large numbers of meaty animals produced as efficiently as possible.

2. Select for as few traits as possible (growth rate, feed efficiency, and meatiness.)

3. Keep accurate records. Producers will be required to identify each animal so they can select those which are superior to their parents and litter mates. Ear notching is one means of identification.

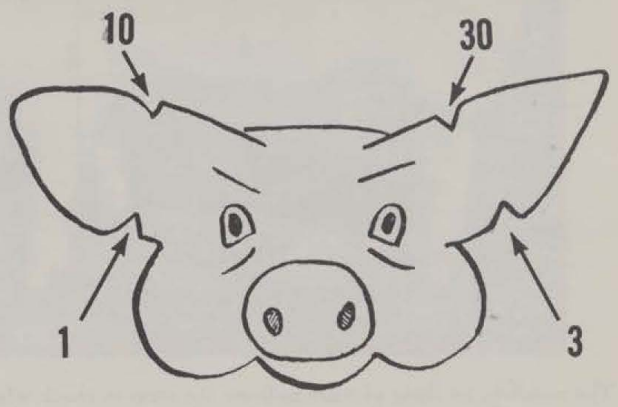


Figure 1

By **Laverne Kortan,** associate Extension livestock specialist

Table 1 and figure 1 show one method of notching.

You should also keep records on the daily rate of gain; feed required per pound of gain from shortly after weaning to a weight of 180 to 200 pounds; backfat probes on all prospective breeding animals at about 200 pounds; and carcass data whenever it can be obtained. Carcass figures on not less than two pigs should be recorded.

4. Cull vigorously. Inferior breeding should never be left in the herd.

5. Use the right mating system. Results from outbreeding or crossbreeding are the most favorable when only the best parents are used for breeding purposes.

WHAT TO LOOK FOR

Breeding animals. Putting your records to use in selection of the right boars and gilts is your ultimate goal, of course. When selecting a boar you should pick those that:

1. Weigh 200 pounds at 165 days and probe less than 1.1 inches backfat at this weight.
2. Have adequate length and good underlines with at least six well-defined teats on each side.
3. Have heavy muscling through the ham loin and shoulder area and have trim middles.

Slaughtered litter mates of the boar selected should average 29 inches in body length, less than 1.6 inches backfat, with loin eye area of 4 square inches or more. The lean cuts (ham, loin, picnic, and Boston Butt) should make up 36.4% or more of the live weight and 52% or more of the chilled carcass. These animals should dress 70% of off-truck weights.

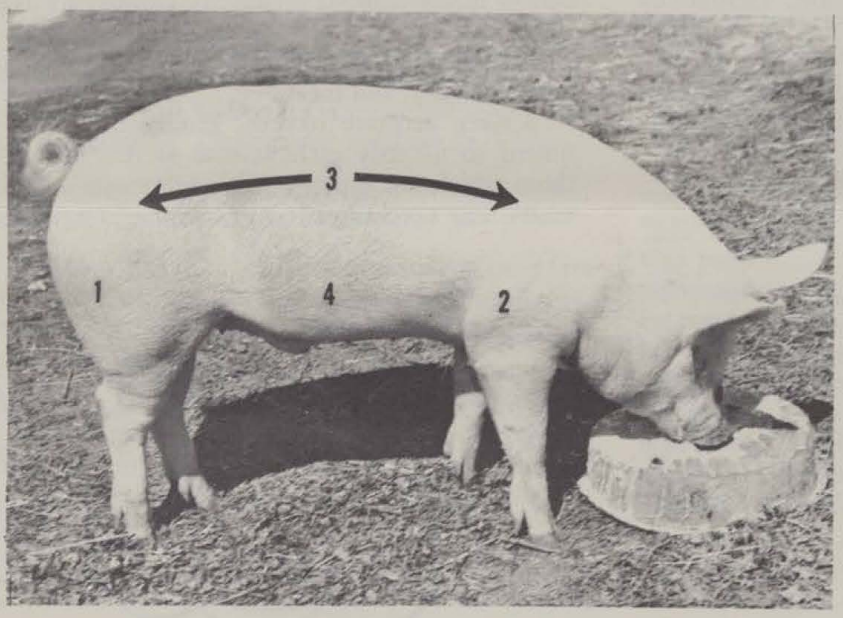
The gilts you select should:

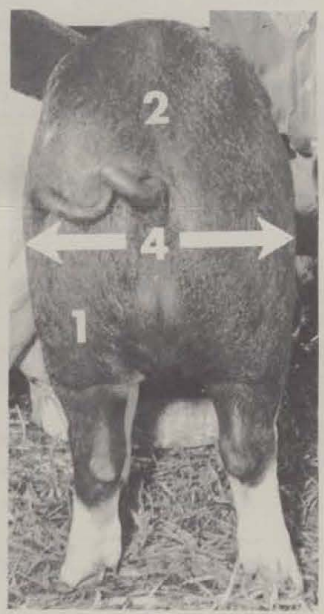
1. Be from litter of eight or more pigs raised.
2. Weigh 230 pounds at 180 days of age.
3. Have a backfat probe of less than 1.35 inches at 200 pounds.
4. Have a minimum of 12 functional teats on the underline.
5. Have good length of body with well-developed heavy muscled hams and loin area.
6. Have broody clean heads, good feet and legs, with adequate depth of side and balance of body.

Butcher animals. Yields of lean cuts (hams, loins, picnics, and Boston Butts) determine the type of butcher hogs produced. Table 2 lists the percent requirements needed for the various types (grades) of butcher hogs on a live and carcass basis.

Table 2. Determining Butcher Hog Grades by Percentage of Four Lean Cuts in Live and Carcass Weights

Types (grades) of butcher hogs	% of 4 lean cuts based on live market weight	% of 4 lean cuts based on carcass weight
Meat-type	35 and up	50 or more
Good or average	33-34	47-50
Fat hogs	Less than 33	Less than 47
Medium and culls	Lean but lack muscling and quality	





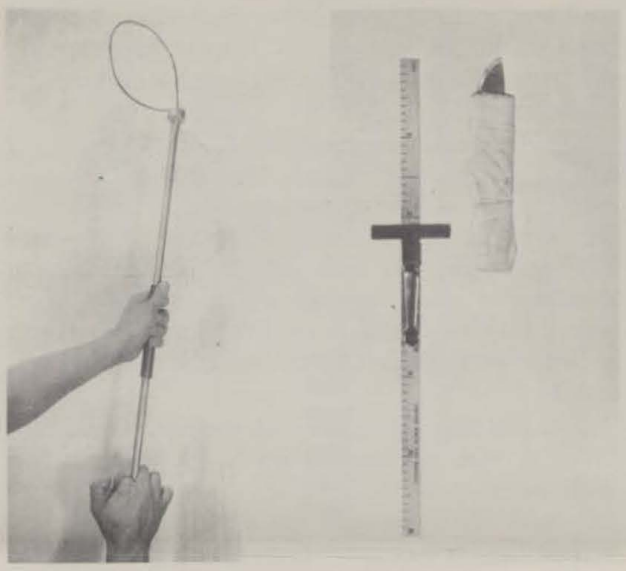
The numbers on these pictures indicate the areas to check when selecting meat-type animals. A good butcher hog needs muscled hams (1 in picture), proper finish (2), adequate length (3), and a high dressing percentage (4). Table 2 shows how types or grades are determined by the percent of the four lean cuts (ham, loin, picnics and Boston Butts) in live market and carcass weights.

MEASURING BACKFAT

Probing is a measurement of backfat thickness on the live hog. It is a simple procedure which causes no discomfort to the animal.

Research data indicate that probes taken when pigs weigh about 200 pounds have value in determining the degree of fatness in breeding groups of individuals. Each 1/10 inch decrease in average backfat means a 1% increase in lean cuts in the carcass. For this reason backfat thickness should always be figured into the selection of any hog.

Probing tools include a snare, knife or scalpel blade, and a thin ruler graduated in tenths of an inch (see picture).

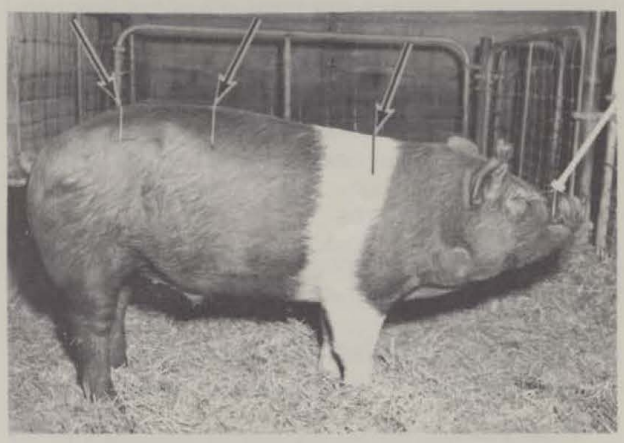


Probing tools include a snare, a knife or scalpel, and a thin steel ruler graduated in tenths of an inch.

HOW TO PROBE

Wrap your knife or scalpel blade with tape 3/8 inch from point, to keep it from going too deep. Then hold the hog in a squeeze shoot or with a nose holder, and pierce skin at (1) mid-point of shoulder, (2) above knee at last rib, and (3) halfway between last rib and base of tail. Make all probes 1½ to 2½ inches to the side of the midline of back and crossways to the pig.

Insert steel ruler in cut (one probe should be measured before another is cut) and slant bottom end toward middle of pig's body, forcing ruler through fat down to the muscle. Push the clip of the ruler against the skin, remove the ruler and read the measurement.



Probe (1) at midpoint of shoulder, above knee, (2) at last rib, and (3) halfway between number (2) and the base of the tail.

WHEN TO PROBE

Probe at weights from 175 to 225 pounds when hogs are on a standard fattening ration of grain and supplement. Probes will not be as reliable in predicting gilt and boar performance if taken when they are on a restricted ration, or if they weigh less than 175 pounds or more than 225.

PUTTING PROBE FIGURES IN USABLE FORM

Adjusting weights. To decide which are the faster-growing pigs you must compare all at a common age. Use the weight adjustment table. The range of ages should be no more than 140 to 220 days.

Adjusting probes. You must also compare the backfat measurements for pigs at a standard weight. The weight used is 200 pounds. Since not all of the pigs will weigh 200 pounds on the day probed, adjust the backfat thickness to a 200 pound basis, using the probe adjustment table on Page 5.

For example, assume a pig is probed at 210 pounds. Probes are: 1.8 inches at first rib, 1.4 inches at last rib, and 1.6 inches at top of ham. The average of these is 1.6. To adjust the probe to 200 pounds on the table, lay a ruler from the actual weight as read on the left hand scale to the depth of the probe as read on the right hand scale. The intersection of this line and the center scale shows the equivalent probe of 1.53 inches at 200 pounds.

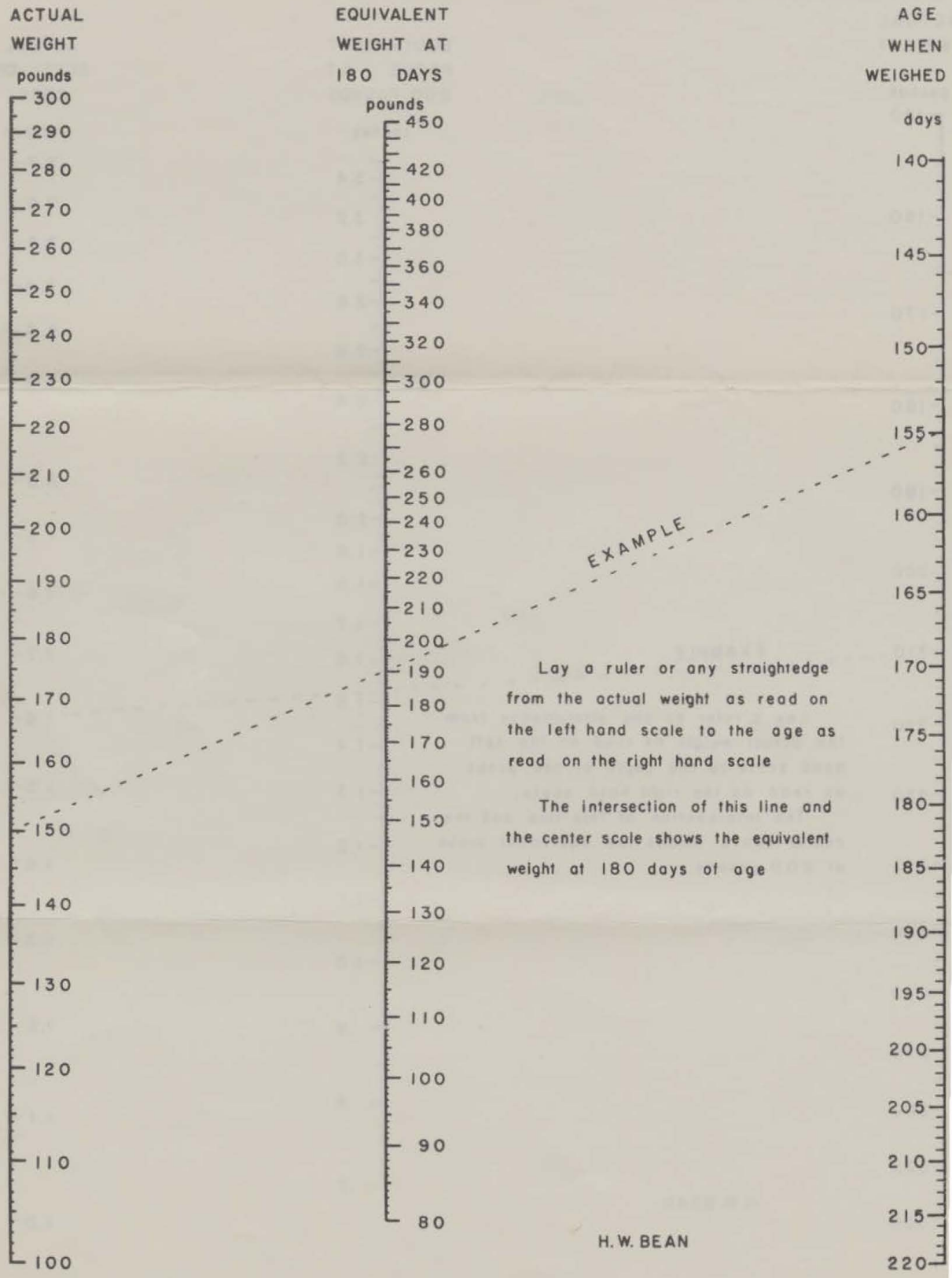
USING PROBE FIGURES AFTER SELECTION

Commercial herds. Probe and weigh only the gilts. First sort them from the barrows. Identify and sort off obviously poor ones. Collect the figures on the remaining gilts and adjust, using the probe and weight adjustment tables.

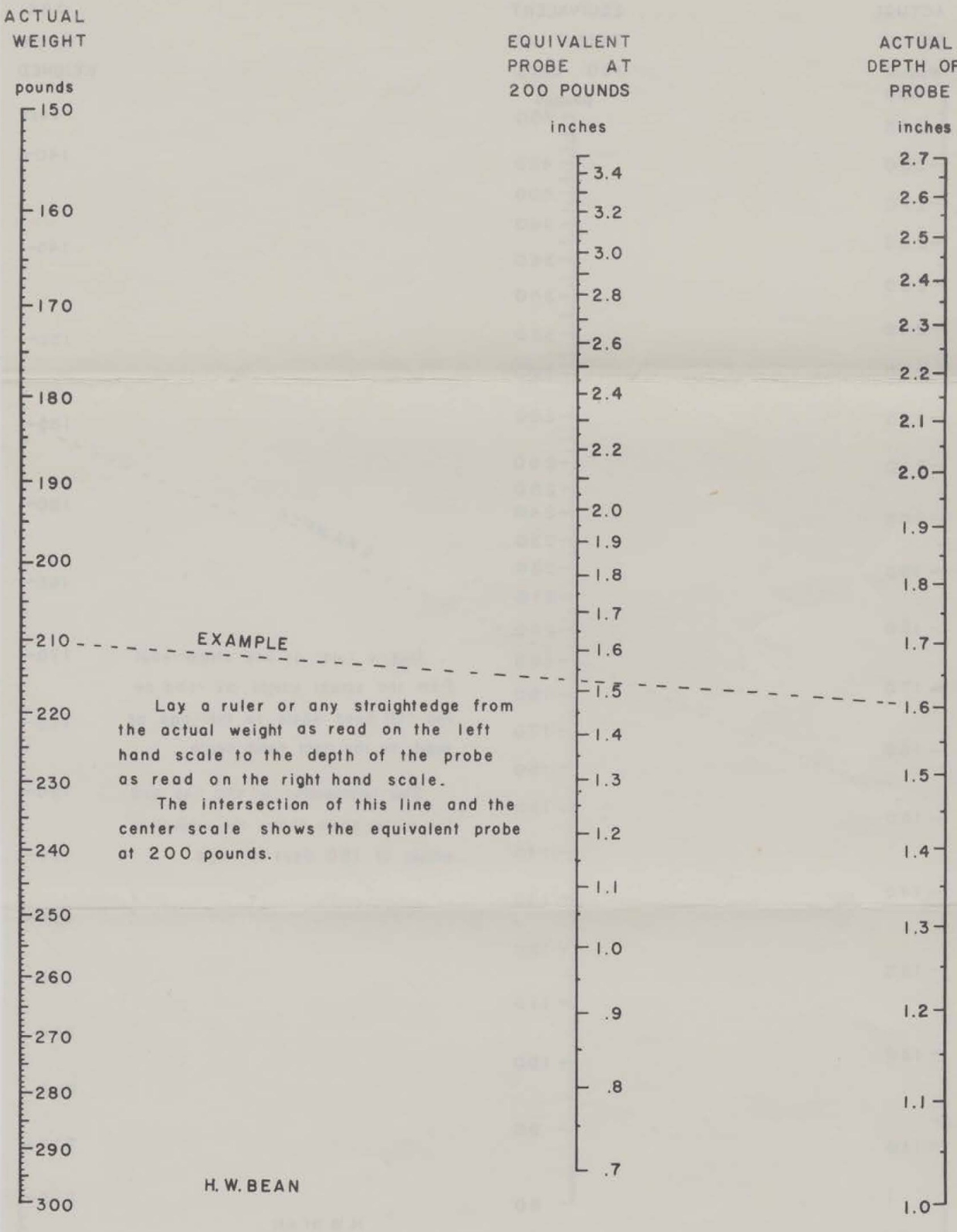
After the figures are standardized, arrange the gilts in the order of their weights, with the heaviest at the top and the lightest at the bottom. Then cull the low 40% of those weighed. Keep the leanest half of the remaining 60%.

Purebred herds. Probe and weigh all sound boars.

WEIGHT ADJUSTMENT TABLE



PROBE ADJUSTMENT TABLE



Cull any unsound boars before probing and weighing. Cull the gilt herd visually. Then probe and weigh the remaining gilts. Adjust the weights and backfat measurements.

Purebred boars can be culled by taking the lower half by weight, and then the lean half of the heavy end. Or if you have an outstanding herd, you can choose to cull by this standard: Keep no boars with 180-day weight less than 200 pounds and backfat thickness of more than 1.3 inches on a 200-pound basis. You should always use this standard in breeder herds where you are producing boars for commercial use.

Use the same procedure with the gilts in purebred herds as with commercial herds. However, if you wish, you may use this standard for culling: Keep no gilts with 180-day weight less than 200 pounds and backfat thickness of more than 1.5 inches.

Boars are leaner than either gilts or barrows, and gilts are leaner than barrows. Therefore, in order to produce lean barrows, you must use leaner boars and gilts.

Again remember the most effective selection will be made under full-fed conditions. A limited-fed boar which measures 1.3 inches backfat is genetically a fatter boar than he measures.

KEEPING FEED RECORDS

A feeding test, properly set up, can provide additional useful sire and dam information, to supplement probing and weighing in final selection. You can set up to handle individual pigs, pairs, litters, or groups from several litters, kept together.

Pens. Provide 6-8 square feet of housing and 7-9 square feet of outside lot area per pig. The pens may be on a concrete slab. Use either portable houses or other available housing. This housing need not be elaborate.

Equipment. Feeders should be built alike so that all the pigs have equal opportunity.

When to Pen the Pigs. Place pigs in the pens a few days before the test is to begin. Let them become accustomed to the small pen and to the feed and feeder before they go on test.

Starting the Pigs on Test at 50 to 60 pound weight. If individual pigs are to be fed, they should weigh within a pound or two of the same weight when started on the test. Weight of pigs in a pair, a litter, or of a group should be nearly equal if you are feeding pairs, litters, or groups. You can weigh the pigs easily, quickly, and accurately on a bathroom scale, with a man on the scale holding each pig.

Feeding the pigs. There are two easy ways to keep feed records. One is to sack the feed in 80-pound units and keep track of the number of sacks fed. Record the feed weight on a small card attached inside the feeder each time you put in feed. This should be about once a week. Keep a duplicate record in a notebook.

The other way is to place a weighed amount of feed in bulk in a barrel or large box. Each lot has its own feed storage. When the barrel or box gets empty, put in another weighed amount of feed and record it. At the end of the test, weigh back the unused feed from the feeder, plus the feed remaining in the storage barrel or box.

Subtract this amount from the total feed you weighed into the container. This would probably be the most simple way to keep the records, especially if a complete ration of ground or pelleted corn and supplement is fed. If shelled corn and supplement are fed separately, the record keeping is somewhat more complicated.

Keeping the Records. Record the beginning weight of each pig. A portable dial scale can be used for later weights and for weighing feed. Weigh the pigs only at the beginning and the end of the test. But as they approach final weight, you may have to weigh two or three times, so that each pig or unit of pigs comes off test at about the same weight.

And at least for the first year, wth fall-farrowed pigs, it is helpful to weigh them several times, weighing the feeders at the same time.

While this is not necessary, it will be of interest to the breeders to see what happens to efficiency as the weight increases. The feeders can be weighed with the portable outfit by attaching a wire to the feeder and lifting it off the ground. In this way, record of feed consumption can be obtained without emptying the feeders.

Probe all boars for backfat thickness at the conclusion of the test.

Final weights of the pigs should be at least 190 and preferably 200 pounds.

Using the Records. Use the records to cull the poor boars and sows. Use them with the herd data in making more accurate selections among pigs.

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